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# Royal Commission

on

# Electric Power Planning

AN OVERVIEW

OF THE

MAJOR ISSUES

ISSUE PAPER # 9

MAY 1977



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# ROYAL COMMISSION ON ELECTRIC POWER PLANNING

## AN OVERVIEW OF THE MAJOR ISSUES

### Introduction

During preliminary public meetings and public information hearings respectively, the Commission identified, and sought information concerning, many issues which relate to the basic concepts of electric power planning. Several hundred of these have been introduced and explained in eight issue papers.

These will provide the information base for the debate phase of the Commission's inquiry presently being undertaken. However, because of the large number of issues and the complexity of the associations between them we have thought it desirable to publish this "Overview Paper". Its purpose is to draw the public's attention to specific issue areas, we refer to them as the "recommendation areas", predicated on the information available to date, concerning which the Commission will probably develop its recommendations, after, of course, having heard the arguments presented during the debate phase of the inquiry. It should be emphasised that, during this phase, equally significant issue areas may emerge and may give rise to recommendations. Note that the term "debate phase", rather than "final phase", is used because hearings, relating to specific projects (see paragraph 4 of the Terms of Reference), will probably constitute the final public hearing phase of the inquiry.

The "recommendation areas", introduced in the following sections, follow closely the topics presented in the previously published issue papers, and the sequencing of the areas is roughly the same as the Commission is adopting in the debate phase hearings.







Reference should be made to the issue papers for more detailed statements of the issues relating to specific areas. If still more detailed information is needed, reference to the transcripts, memoranda, submissions and research reports available in the Commission's Information Centre, and in the Regional Depositories, i.e. the Main Public Libraries of Ottawa, London, Sudbury, and Thunder Bay, should be made.

#### I. The Demand for Electric Power - Recommendation Areas

##### Future needs

- Relating to the future demand for electric power and energy in Ontario e.g. system growth rate targets to 1993 and beyond (note that "growth" need not necessarily imply "positive growth" per capita - it may imply "zero growth").
- Reliability of the electric power system and corresponding targets for "excess margins" - these relate specifically to the generating capacity over and above peak power requirements. To date no corresponding measure of "excess transmission margins" is available - the need for additional transmission, and switching facilities, will normally be associated with new generating facilities.
- The degree of inter-fuel substitution - the role of electricity.
- Contingency plans to deal with possible power cuts - customer allocation considerations.

##### Energy conservation utilization

- Putting fuel conservation on the provincial (and federal) agenda - energy as a currency in future planning.
- The voluntary or legislative approach to fuel conservation - innovative approaches to fuel conservation (tax incentives? subsidies? standards for electric appliances?)
- The efficient utilization of energy and its impact on the future demands for electricity.
- The use and impact of:
  - i) Load Management and energy storage
  - ii) Utilization of thermal discharges
  - iii) Co-generation of electric and thermal power
  - iv) Use of waste products, including municipal wastes, as an energy resource.



- Research in fuel conservation technology and economics.

## II. Conventional and Alternate Generation Technologies - Recommendation Areas

As defined in Issue Paper #3 this area includes hydro-electric and fossil-fuelled generation, solar energy, and other alternate generation technologies.

### Hydroelectric power

- The degree of dependence, to the year 1993 and beyond, of Ontario Hydro on hydroelectric power.
- The viability of low-capacity decentralized sites. (Note that the development of new sites would be predicated on social (i.e. the impact on the life-styles of native peoples) environmental, economic, meteorological, and technological factors.)

### Coal power

- The degree of dependence, to the year 1993 and beyond, of Ontario Hydro on coal power (i.e. coal-fired thermal generating plants).
- The magnitude and security of coal requirements from the United States and Alberta.
- The transportation of coal.
- The coal refinery concept.
- The monitoring and controlling of emissions from coal-burning generating stations and the disposal of the fly ash.
- Criteria for the selection of potential coal-fired generating station sites.
- The health and environmental implications of coal-burning stations.
- Research and development programs e.g. synthetic oil and gas from coal.

### Oil and natural gas-fired generation

- The degree of dependence, to the year 1993 and beyond, of Ontario Hydro on oil and natural gas as primary fuels.





#### Solar power

- The degree of dependence of the province on solar-powered space and water heating for the period to the end of the present century.
- Measures to encourage the use of solar power - both "passive" and "active" solar power systems.
- Research and development in solar power - solar space and water heating, and solar electric power.

#### Other alternatives

- The degree of dependence, to the year 1993 and beyond, of the province on wind power, biomass energy, nuclear fusion power, magnetohydrodynamics, and hydrogen (and gaseous fuels derived from it), obtained by electrolyzing water.
- Research and development programs.

### III. Nuclear Power - Recommendation Areas

#### Need and economics

- The degree of dependence, to the year 1993 and beyond, of Ontario Hydro on nuclear fission power.
- The financing of nuclear power stations.
- The socio-economic factors associated with nuclear power (man-power, employment, education, etc.)
- Research and development programs.

#### Security and protection

- Safety considerations relating to nuclear power - size and siting of generating stations, monitoring and control of radioactive effluents, protection of employees and the general public.
- The role of regulatory bodies.
- The security of nuclear fuel supplies.
- The protection of nuclear power stations, of nuclear fuels, of spent nuclear fuels (on site and in transit).
- The management of spent nuclear fuel.





IV. Transmission and Distribution of Electric Power - Recommendation Areas

- The physical characteristics of transmission lines, switching stations, etc. - the routing and siting of transmission lines (environmental implications).
- The impact of biological (e.g. health) and environmental (e.g. ozone) effects of high voltage transmission lines.
- The safety of high voltage transmission systems
- New technologies

V. Land Use - Recommendation Areas

- The impact of electric power developments on high quality agricultural land and other resource lands.
- Socio-economic and environmental factors to be considered in the siting of transmission line corridors and other electric power facilities.

VI. Financial and Economic Factors - Recommendation Areas

- The limitations and/or competing demands for capital - the review and co-ordination processes.
- The extent to which the public might be expected to "pay for the future" of the province's electric power system.
- Electric power export and import policies.
- Government investment in energy-saving (i.e. fuel conservation) systems - the economic viability of co-generation systems.
- The development of contingency plans in the event of electric power shortages.
- Regional development, land use, and electric power system planning - integrated approaches.

VII. The Total Electric Power System - Recommendation Areas

- The concept of the "responsive system" in the development of major facilities (e.g. the problem of long lead times).
- The degree of decentralization, to the year 2000, of the Ontario Hydro system - the generation mix.



- The degree of reliance on interconnection with contiguous systems - the national grid concept - the role of d.c. transmission.
- The future role of Ontario Hydro in the province's total energy requirements - the total energy system.

VIII. Decision-making and Public Participation - Recommendation Areas

- The respective roles of provincial government ministries, the Ontario Hydro Board, regulatory bodies such as the National Energy Board, the Ontario Energy Board, the Environmental Assessment Board, etc. as well as those of public interest groups and the general public.
- Decision-making frameworks for specific aspects of electric power planning e.g. plans for generating stations (sites, size, type, etc.) transmission lines (routes, type, etc.) and other major facilities; economic planning; environmental concerns.
- Total energy planning
- The format and guidelines for public hearings relating to the electric power system.
- Financing public interest groups.







